

REMARKS

Status of the Claims

Claims 2-37, 39 and 40 are pending in this application. No claims have been canceled in this paper. Claims 1 and 38 were previously canceled. No claims have been added. Claims 39 and 40 have been amended to recite that capillary forces exclusively act on the flow of the fluid in the reaction chamber only and not the distributor and inflow channels. No new matter has been added by the above claim amendments.

Rejection under 35 USC 112, first paragraph

The Examiner rejects claims 2-37, 39 and 40 as containing subject matter that is not disclosed in the original specification. The Examiner states that the original specification does not teach a structure that will only permit capillary force to be applied to the fluid. Applicants traverse the rejection and respectfully request the withdrawal thereof.

Applicants submit that the claims and specification disclose a means for generating capillary force. Please see page 5, lines 1-3 and 12-28. Applicants submit that the claims and original specification clearly disclose a structure for generating capillary force. As such, Applicants respectfully request that this rejection be withdrawn.

Rejection under 35 USC 112, second paragraph

The Examiner rejects claims 2-37, 39 and 40 as indefinite. The Examiner states that the phrase "effected exclusively by capillary forces" is vague since it is not clear what structure is intended. Applicants traverse the rejection and respectfully request the withdrawal thereof.

Applicants respectfully disagree with the Examiner's statement. Applicants submit that the structure for effecting capillary forces in claim 39 is in terms of "means plus function". Therefore, the intended means is described in the specification. Please see pages 5-6 of the specification for a description of the capillary force generating means. The means may be capillary channels, grooves, furrow-like deepening, and the like. To have the fluid flow exclusively by capillary forces, it is provided according to the invention that in each reaction chamber, notably in the entrance region of the inflow channel, structures formed on the inner side of the reaction chamber or asymmetries are provided as a means for generating a capillary force enabling the flow of the liquid from the inflow channel into the reaction chamber. For example, inflow grooves provide a means for generating capillary force. The inflow groove comprises at least two limiting faces connected to each other by a transition region. This transition region is provided with rounded regions whose radii are small enough to generate the capillary forces.

As such, Applicants submit that the "means for generating a capillary force" that exclusively moves the liquid by capillary force is described in the specification; thus, the phrase "effected exclusively by capillary forces" is not vague since it is clear what structure is intended as the "means". Therefore, Applicants respectfully request that this rejection be withdrawn.

With respect to claim 40, Applicants recite that the surfaces of the entrance region of the inflow channel of the reaction chamber are arranged so as to provide liquid flow into the reaction chamber exclusively by capillary force. This limitation is described in the specification and is not indefinite.

Rejection under 35 USC 103(a)

The Examiner rejects claims 2-37, 39 and 40 as obvious over Shartle et al. USP 5,230,866 (Shartle '866), Columbus USP 4,426,451 (Columbus '451), Subramanian et al. USP 5,223,219 (Subramanian '219) or Cottingham USP 5,948,673 (Cottingham '673). Applicants traverse the rejection and respectfully request the withdrawal thereof.

Applicants submit that the present invention is directed to a sample support, comprising at least one sample receiving chamber for a sample liquid, a distributor channel for a sample liquid, connected to said at least one sample receiving chamber, with at least one such distributor channel extending from each sample

receiving chamber, at least one reaction chamber comprising a cavity which is delimited by surfaces and is entered by an inflow channel branched off said at least one distributor channel, and a venting opening for each reaction chamber, each distributor channel and each inflow channel being dimensioned to have the liquid transport through the distributor and inflow channels effected by capillary forces; wherein, in each reaction chamber, said surfaces in the entrance region of the inflow channel, which delimit the cavity, are arranged so that the sample liquid flows from the inflow channel into the reaction chamber exclusively by capillary force (e.g., see claim 40).

The present invention is arranged so that the sample liquid moves through the reaction chamber by capillary force only. No external pressure or object is used to create the capillary force. The arrangement of the surfaces and channels alone enables the capillary force.

Applicants submit that in all of the cited references other forces, apart from capillary forces, are applied to the fluid to move the fluid from one chamber to the next. However, in the present invention only capillary forces move the fluid into the reaction chamber by way of a means/structure for generating capillary forces.

Subramanian '219, the closest prior art reference cited by the Examiner discloses that in each chamber a porous element is

inserted into the apparatus to generate the capillary force. The porous element is not a part of the apparatus. The apparatus of Subramanian '219 is not arranged so that the fluid flows through channels by the capillary force as a result of the arrangement of the surfaces and channels as in the presently claimed invention. Instead, an external object, the porous element, causes the capillary force. No such porous element is intended to be the "means" recited in the claimed invention (e.g., see claim 39). The means in the present invention is the specific design of the walls and surfaces of the chamber. Subramanian '219 fails to disclose or suggest this element of the invention.

In the remaining prior art references cited by the Examiner, some other force, such as gravity or pressure is applied to the fluid to move the fluid through the channels to the reaction chamber. The cited references fail to disclose an apparatus having the specific means for moving the fluid to the reaction chamber by only capillary forces.

As such, Applicants submit that this rejection should be withdrawn since no *prima facie* case of obviousness has been established. The cited references fail to disclose or suggest each element of the claimed invention. Particularly, the cited references fails to disclose or suggest the specific means for moving the fluid into the reaction chamber exclusively by capillary forces.

Conclusion

As Applicants have addressed and overcome all rejections in the Office Action, Applicants respectfully request that the rejections be withdrawn and that the claims be allowed.

Initialed PTO Form 1449

Applicants respectfully request that the Examiner provide a copy of the initialed PTO Form 1449 indicating that the Examiner has considered all of the references cited therein. Applicants enclose a courtesy copy of the PTO Form 1449 for the Examiner's convenience.


Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Kecia Reynolds (Reg. No. 47,021) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition for a one (1) month extension of time for filing a reply in connection with the present application, and the required fee of \$55.00 is attached hereto.


If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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By 

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Attachment: Copy of PTO Form 1449

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